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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/941,884	08/28/2001	Joan Manuel Garcia	60003206-1	7849

7590 02/10/2005

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EXAMINER
NGUYEN, LAM S

ART UNIT	PAPER NUMBER
2853	

DATE MAILED: 02/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/941,884	GARCIA ET AL.	
	Examiner	Art Unit	
	LAM S NGUYEN	2853	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 November 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18 and 20-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) *2 and 11* is/are allowed.

6)☒ Claim(s) *1,3-10,12-18 and 20-22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *22 March 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

The applicants' arguments filed on 11/22/2004 have been found persuasive; as a result, the final rejection has been withdrawn and a new ground of rejection is made as follows:

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claims 1, 3-5, 10, 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gast et al. (US 6076915) in view of Dunand (US 6398334).

Referring to claims 1, 3-4, 10, 13:

Gast et al. discloses a diagnostic method for visual detection by a user of poor media advance calibration in an ink-jet printing system (*column 9, lines 25-29: An operator inspects the test pattern*) **(Referring to claims 4, 13)**, comprising:

providing an ink-jet printhead mounted on a carriage, the carriage mounted for movement along a scan axis (*FIG. 1: Printheads 14, 16, 18, 20 move in the scanning axis 26*); providing a media advance system for advancing a print medium along a media path which is transverse to the scan axis (*FIG. 1: The media sheet 12 moves in the media direction 28*) (*column 5, lines 24-29*) **(Referring to claims 10, 13)**;

entering a diagnostic mode of the printing system in which mode normal printing

jobs of the printing system are not printed (*column 9, line 32 to column 10, lines 50: Printing a set of test (diagnostic) pattern 105, 107, 109, and 111 for calibrating paper advancement distance – not for image printing purpose*);

printing different areas of a diagnostic pattern at different passes of one or more ink-jet printheads with a controlled amount of media advances between the passes, wherein said different areas are nominally aligned along a horizontal line **(Referring to claims 3, 12)** (*FIG. 10-11 and column 9, line 32 to column 10, lines 50*).

Gast et al. does not disclose wherein media advance error between the printing of the different areas is accumulated and the step of examining the diagnostic pattern to determine whether the accumulated media advance error is sufficiently objectionable to take corrective action.

Dunand discloses a process for controlling printing medium advance in a printer, in which media advance error between printing of different areas (*band*) is accumulated and wherein if the accumulated media advance error is sufficiently objectionable, a corrective action is taken (*column 10, line 22-26: If the accumulated advance error reaches a half of a nominal advance, the program will choose to use the reference mark to print the next band*).

Therefore, it would have been obvious for one having ordinary skill in the art at the time the invention was made to modify the printing process disclosed by Gast et al. such as accumulating media advance error and taking a corrective action if the accumulated error is sufficiently objectionable as disclosed by Dunand et al. The motivation of doing so would have been to provide a process to correct misalignment defects caused by the differences between the

real advance of the substrate and its nominal advance as taught by Dunand et al. (*column 1, lines 7-11*).

Gast et al. also discloses the following claimed invention:

Referring to claims 5 and 14: wherein the step of examining the diagnostic pattern is conducted by an optical sensor (*Abstract*).

2. Claims 7 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gast et al. (US 6076915) in view of Dunand (US 6398334), as applied to claims 1 and 10, and further in view of Maeda et al. (US 6334659).

Gast et al., as modified, discloses the claimed invention as discussed above except that wherein said step of printing different areas of a diagnostic plot includes: applying a diagnostic multi-pass print mode mask, wherein a plurality of carriage passes are employed to print the area subtended by a printhead nozzle array, the diagnostic print mode mask comprising a rectilinear grid of pixels, with each pixel location having a number associated therewith, the number representing the pass in which the pixel will be printed, and wherein said different areas nominally aligned along a horizontal line include a first set of pixels on a row of said grid, and a second set of pixels on said row, and wherein said first set of pixels is printed on a different pass than said second set of pixels is printed.

Maeda et al. discloses that wherein said step of printing different areas of a diagnostic plot includes: applying a diagnostic multi-pass print mode mask, wherein a plurality of carriage passes are employed to print the area subtended by a printhead nozzle array (*FIG. 7A*), the diagnostic print mode mask comprising a rectilinear grid of pixels (*FIG. 10*), with each pixel location having a number associated therewith (*FIG.10*), the number representing the pass in

which the pixel will be printed, and wherein said different areas nominally aligned along a horizontal line (*FIG. 10C: areas printed by #1 pixel and #3 pixel are aligned along a horizontal line*) include a first set of pixels on a row of said grid, and a second set of pixels on said row (*FIG. 10C: the #1 pixel set is on the same row with the #3 pixel set*), and wherein said first set of pixels is printed on a different pass than said second set of pixels is printed (*FIG. 10C: the #1 pixel set and #3 pixel set are printed on the different passes*).

Therefore, it would have been obvious for one having ordinary skill in the art at the time the invention was made to include the applying of a diagnostic multi-pass print mode mask as disclosed by Maeda et al. into the advance control process as disclosed by Gast et al., as modified. The motivation of doing so would have been to reduce the formed bind pitch to less than paper transport width without increasing the number of scans; thus, the banding artifacts are imperceptible as taught by Maeda et al. (*column 4, lines 4-10*).

3. Claims 8-9, 17-18, and 20-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gast et al. (US 6076915) in view of Dunand (US 6398334), as applied to claim 10, and further in view of Yen et al. (US 5992962).

Gast et al., as modified, discloses the claimed invention as discussed above except wherein said diagnostic print mode mask defines that the first w/2 pixels in the row are printed in the same pass, and the last w/2 pixels in the row are printed in another pass, wherein said diagnostic print mode mask includes a row wherein said first w/2 pixels are printed in a first pass, and said last w/2 pixels are printed in a last pass of said plurality of passes, and the diagnostic print mode mask comprising a rectilinear grid of pixels and a row width of w pixels, and said different area include a first set of pixels on a row of said grid, and a second set of

pixels on said row, and wherein said first set of pixels is printed on a different pass than said second set of pixels is printed (**Referring to claims 8-9, 17-18, 20-21**).

Yen et al. discloses printing patterns including the first w/2 pixels in the row are printed in the same pass, and the last w/2 pixels in the row are printed in another pass, wherein said diagnostic print mode mask includes a row wherein said first w/2 pixels are printed in a first pass, and said last w/2 pixels are printed in a last pass of said plurality of passes (*FIG. 6*), and wherein said different areas are nominally aligned along a horizontal line (*FIG. 3*), and the diagnostic print mode mask comprising a rectilinear grid of pixels and a row width of w pixels, and said different area include a first set of pixels on a row of said grid, and a second set of pixels on said row, and wherein said first set of pixels is printed on a different pass than said second set of pixels is printed (*FIG. 6*).

Therefore, it would have been obvious for one having ordinary skill in the art at the time the invention was made to modify the diagnostic pattern disclosed by Gast et al., as modified, such as the first w/2 pixels are printed in a first pass and the last w/2 pixels are printed in a last pass of said plurality of passes as disclosed by Yen et al. The motivation of doing so would have been to eliminate unpleasant banding artifacts caused by ink migration as taught by Yen et al. (*Abstract*).

4. Claims 6, 15, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gast et al. (US 6076915) in view of Dunand (US 6398334) and further in view of Takagi et al. (US 6089695).

Gast et al., as modified, discloses the claimed invention as discussed in the first rejection except an initial step of checking for printhead health and taking any corrective needed action to recover nozzle health prior to printing said diagnostic pattern.

Takagi et al. discloses a process in a printer in which a step of checking for printhead health is done (*FIG. 12, step S104: Test to determine if NON-DISCHARGE NOZZLE is present*) and taking any corrective needed action to recover health nozzle prior to printing (*Abstract: After abnormal nozzles are detected, data related to such abnormal nozzles are removed*).

Therefore, it would have been obvious for one having ordinary skill in the art at the time the invention was made to modify the printing process disclosed by Gast et al., as modified, such that including the step of checking printhead health and taking any corrective needed action to recover nozzle health as disclosed by Takagi et al. The motivation of doing so would have been to provide a liquid discharge apparatus capable of obtaining the desired result of discharges without any defects even when non-discharge or another malfunction occurs in the discharging means as taught by Takagi et al. (*column 3, lines 60-65*).

Allowable Subject Matter

Claims 2 and 11 are allowed: The reasons for allowance were indicated the previous office action.

Response to Arguments

Applicant's arguments with respect to claims 1, 3-4, 6, 8, 9-10, 13, 15, 17-22 have been considered but are moot in view of the new ground(s) of rejection.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LAM S NGUYEN whose telephone number is (571)272-2151. The examiner can normally be reached on 7:00AM - 3:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, STEPHEN D MEIER can be reached on (571)272-2149. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LN

June 15, 2004

HAI PHAM
PRIMARY EXAMINER